

TIMBER BASED SHEET MATERIALS

Timber-based sheeting and its uses is a subject most people take for granted. Using the right product for the job is comparable to using the correct tool. This Good Idea Leaflet attempts to explain a little about each material; what it is, how it is made,

it's recommended uses and anything you should be careful of during use.

Timber-based panel products are sheet materials in which wood is predominant in the form of strips, veneers, chips, strands or fibres and are usually recognised within the

following groups:

- Plywood
- Particleboard (including chipboard)
- Oriented strand board (OSB)
- Fibreboard (including MDF)



Timber-based panels are versatile products with a wide variety of uses, due to:

- Their good strength/weight ratio
- Their good strength/cost ratio
- Their ease of working/finishing/fixing
- The range of sizes and thicknesses available
- The range of types and special products available
- Their good environmental credentials (made from a renewable raw material, recyclable, low life-cycle costs)
- Their long history of successful use

Timber-based sheet materials are manufactured to a series of European Standards (ENs), which are published as national standards, for example in the UK as BS ENs. The BS ENs replaced the previous BS product specification standards in the UK in 1997.

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Where possible, timber based sheet materials should be stored flat and allowed to condition where they will be used. This process will usually take between 48 and 72 hours, depending on the material and local conditions. Care should be taken to protect corners and the edges of the sheet, especially where these will be butted together.

Conditioning

Timber panels are normally manufactured at low moisture contents, between 2% and 12%, and may still be very dry at the time of purchase.

Timber and timber-based panels expand when adsorbing moisture from the surrounding air, and shrink when moisture is lost. Panels are manufactured to fairly tight tolerances and excessive changes in moisture content can lead to size changes that can cause problems such as bowing.

You can reduce the risk by matching the moisture content of the panels, at the time of installation, to the area in which it/they will be used.

Storage

Timber sheet materials should be protected from the elements, stacked flat on a level surface, with all edges flush. In areas subject to wetting, should be sufficiently clear to avoid wetting from the ground.

Note: Where possible, don't stack panels on their edge.

When storing a quantity of material, ideally, the best base for a stack is close boarded or slatted pallet. If this is not possible, then the panels should be carefully stacked on battens of equal thickness, at centres of not more than 600mm.

When stacking thin panels (less than 6mm), they should be supported under the whole area by a flat panel of at least 18mm thickness.

If you are stacking a large quantity, then Intermediate bearers should be used every 10 - 15 panels, this will allow ventilation through the stack. Each layer of battens must be placed directly above those in the layers below. The battens should run across the short part of the sheet and any overhang must not be more than 150mm, or the sheet will distort. If stacking for long periods, extra bearers should be used.

Safety

When using large sheets of material, whilst this is obvious, don't be tempted to work by yourself. Apart from some products being heavy, all will act like a sail when exposed to a wind and are more than capable, in the right conditions, of dragging you off an exposed roof, ladder or scaffolding.

When cutting, sanding, routing and drilling always wear gloves, a facemask and goggles. Where practical, always use dust extraction.

Fixing Sheet Materials

Sheet materials should be fixed at regular intervals. The frequency is dependent on the type and thickness of sheet, the fixing method and where it is being used. For example, an exposed garage roof in a windy coastal location will need more frequent securing than one in the centre of an inland town but if in any doubt, add more. When fixing sheets to floors or walls it is a good idea, where possible, to mark pipe and cable runs for future reference.

Tip: When fixing to joists or where you need a straight line, find the centre of the joist at one end and tap in a pin or thin nail into the sheeting, leaving enough proud to attach twine or string. At the other end of the joist, again, find the centre and tap in another thin nail or pin. Next, attach a piece of twine between both pins/nails. Add your desired fixing at regular/suggested intervals along this line. Do this for each joist or desired fixing line. Remove centre line and pins once sheet is secured.

Where a minimum fixing distance from the edge or corner is mentioned, it should be noted that this is dependent on the method and fixing size also the type tool used. Always experiment on a piece of waste material and adjust accordingly.

OSB (Oriented Strand Board)

What is OSB: It is a tough uniform and consistent product that's free from knotholes, splits and voids, to either the face or the core. It is also a good 'value for money' board that is a very useful for various building applications, and can be used as an alternative to plywood.

OSB is made from softwood strands and exterior phenolic resin. The strands are arranged in layers, with the top and bottom oriented roughly parallel to the length of the board and the core layer oriented roughly at right angles to the surface layers. This allows for good engineering of the panel characteristics.

Fixing

OSB can be fixed with adhesive, nails, staples and screws. To reduce the chance of splitting, drill a small pilot hole before screw fixing.

Panels must be laid with long edges at 90° to supports and short edge joints must be staggered. All short edges must be supported on joists/studs or noggins

Fixings should be no closer to the edge than 12mm or 25mm from corners.

OSB can be glued with all types of woodworking adhesive and can be painted with any quality wood-paint system.

OSB2 is for use in dry conditions.

Use for temporary hoarding, packing cases, in-situ formwork, interior cladding, agricultural buildings, portable buildings furniture, garden sheds; shop fitting and display; boarding-up.

OSB3 is a load bearing/structural board which can be used in humid conditions.

Use for flooring, roofing timber frame wall sheathing, formwork, long-term site hoardings etc.

Note: As with most timber products, it is preferable to store OSB for at least 48 hours in the area in which it will be used, allowing the sheet to match the moisture content in the area of service – this is called 'conditioning'.

The current British Standard for OSB is:

- BS EN 300- 1997 Oriented strand boards (OSB)- Definitions, classification and specifications

PLYWOOD

What is Plywood: Simply put, it is any sheet of wood made of three or more thin layers of timber that have been bonded together with glue.

Plywood is a very versatile board. It is generally made of alternate cross veneers of hardwood or softwood, which are then glued together.

Cutting

To reduce damage when cutting, score through the outer veneer on both sides of the sheet using a sharp knife and straight edge, adding masking tape will also help, before starting to saw.

To avoid damaging the finishing face, cut the panel from that face i.e. for hand sawing have the face upwards, for power sawing have the face downwards.

Use a fine tooth panel saw for sheets between 6 and 12mm. Above 12mm, use a coarse tooth panel saw.

Electric saws are more likely to damage the outer skin where the saw cuts away from the material, make sure this is not the side you want as the face.

Fixing

Plywood can be fixed with adhesive, screws, nails or staples.

Fixings should be no closer to the edge than 10mm or 15mm from corners.

Screws don't grip well in plywood so if fitting hinges or the like, use nuts and bolts with large washers to squeeze the sheet. Where you need to screw or nail into the edge of plywood i.e. where a joint is required fit a softwood batten or frame, so that both sheets of ply can be fixed.

When gluing, you must roughen the surface with abrasive paper first, brushing away the dust before applying the glue. Spread the glue evenly and apply clamp together. An adhesive only bonds to the top surface of the plywood, so don't just rely on gluing to support heavy weight.

Exterior grade plywood

Exterior grade plywood is sold in 6, 9, 12 and 18mm, is specially made using a water-resistant adhesive that is highly resistant to weather, micro-organisms, cold & boiling water, and wet or dry heat. Whilst this product is ideal for exterior joinery, it can also be used internally as it is suitable for painting. It can be used as a cladding material, and for insert panels under windows.

When used externally or in areas of high humidity, exterior grade plywood will require the use of paint or varnish to protect the outer veneer and all 4 edges.

Wickes Structural Spruce Plywood 18mm

Wickes Plywood is an excellent general-purpose construction panel, ideal for both interior and exterior construction work as well as numerous uses where strength, stability and light-weight versatility is needed.

The natural properties of this product make it light, easy to work with, easy to saw and easy to nail giving you significant advantages when using Spruce plywood over many alternatives.

All of its natural advantages are brought together by a high quality manufacturing process to produce a consistently reliable panel that is fit for structural use with both CE "Structural 2+" and "BS5268-2:2002" accreditation.

Structurally Sound

All panels, as stated earlier, are CE “Structural 2+” and British Standard “BS5268-2:2002” and are certified to guarantee conformance with UK Building Regulations for wood based structural panels.

Note: As with all untreated plywood, when used in external applications it must be coated, edge-sealed and well maintained during its lifetime.

The reliability of Wickes Spruce Plywood is perfect for a wide variety of on and off site construction projects.

Use for:

Roofing

Perfect for use as roof sarking, ceilings, beam systems and load bearing applications, lightweight Wickes Spruce Plywood is easy to install using normal carpentry tools and construction techniques. Both the square edge and tongue & grooved panels allow for quick and easy fitting of low maintenance roof structures.

The natural strengths of Wickes Spruce Plywood help make the job quicker and easier for you without compromising on quality or safety.

Flooring

Wickes Spruce Plywood is a durable flooring material which is well suited as a substrate beneath various surfaces both in new constructions and renovation.

The smooth surface is an ideal base for wood flooring, carpeting or tiling and its strength and rigidity make it a good load bearing material for solid, strong floors.

With ever tightening government legislation on thermal and sound insulation, it's reassuring to know that the solid wood construction of Wickes Spruce Plywood provides naturally good sound and thermal insulation properties.

At the same time, its strength and light weight allow thinner than usual panels to be used for suspended floor structures without having any negative effect on the load-bearing properties of the floor structure at all.

Wall Sheathing

With its excellent racking strength and wind break properties, Wickes Spruce Plywood makes a versatile wall material for both interior and exterior walls and load bearing structures and as previously mentioned, also have natural heat retention and noise insulation properties.

Renovation Work

Easy to install by the DIY enthusiast or construction professional alike, Wickes Spruce Plywood is the best solution for all types of renovation, alteration, general repair work, upgrading or replacing floors and repairs to roof structures.

The lightweight nature of these panels combined with their inherent strength and durability makes for simple installation and finishing with conventional woodworking tools.

These strengths are particularly useful when dealing with difficult structures or where space is limited.

Concrete Formwork

Wickes Spruce Plywood is suitable for use as a good all-round formwork panel due to its strength and durability.

Also use for: Packaging

A clean and safe raw material for packaging and transporting. Wickes Spruce Plywood can tolerate a wide range of weather conditions including extreme humidity. This makes it superbly suited to all kinds of packaging applications such as transport crates and pallets.

Its strength and lightweight characteristics make it ideal for highly protective and durable box construction with heavy-duty uses, whilst remaining easy to handle. Once its productive life is over, it can be easily recycled.

Furniture

With both strength and lightweight properties, Wickes Spruce Plywood is ideally suited to the making of furniture. A major area of its use is within the manufacture of upholstery furniture, where it is used in conjunction with products such as chipboard to provide additional strength to the overall structure.

The current British Standards for specifying both veneer and core plywood are:

BS EN 636-1: 1997. Plywood-Specifications. Part 1. Plywood for use in dry conditions

BS EN 636-2: 1997. Plywood-Specifications. Part 2. Plywood for use in humid conditions

BS EN 636-3: 1997. Plywood-Specifications. Part 3. Plywood for use in exterior conditions

CHIPBOARD

What is Chipboard: It is a high-density low cost rigid board with a relatively smooth surface. Made from wood chips and compressed sawdust, glued together with an adhesive, under heat and pressure. Whilst chipboard has many uses it is not suitable for external use.

Chipboard is an engineered panel product in which particles of wood are bonded together to form a panel. It is most commonly formed using a synthetic resin adhesive. It is made from softwood chips which are dried and mixed with an adhesive that is appropriate to the product's end-use. The chips are formed into a mat and are then pressed between heated platens to compress and cure the panel. The finished panels are then sanded and cut to size

Cutting

When cutting chipboard a panel, circular or jigsaw should be used but these can sometime leave poor finish. A good idea, as with plywood, to apply a strip of masking tape to the surface and cut through that, this will reduce the amount of damage at the cut edge.

When cutting coated or veneered chipboard, apply the masking tape to the finished face, this will reduce chipping.

Fixing

Nails, pins and screws may be used on chipboard, but they should always be fixed through the chipboard and into the support below.

Fixings should be no closer to the edge or corners than 10mm.

The screw-holding power is improved if twin-threaded general-purpose screws are used but always follow manufacturer's instructions when fixing special purpose boards. When screwing through chipboard with a power driver, make sure it is on a low torque setting, or you will drive the screw through the board. A good idea is to stop short and finish with a hand driver.

Tip: When assembling bedroom, kitchen or any type of furniture, never use a power driver!

Any woodworking adhesive can be used with chipboard, although if it fails, the outer 'chips' separate from the rest of the board, so don't just rely on gluing to support heavy weight.

Use for: Flooring, shelving, wall and ceiling linings, cupboards, internal fittings and boxing in.

The Wickes range includes:

P4 - Flooring grade, tongue and grooved 18mm. The edge is profiled to form the tongue and groove (T&G) joints and has a fine sanded surface.

Use only in domestic areas that are not subject to wetting.

P4 - Loft storage panels 18mm.

Supplied in a size that is easily carried through a loft trap door, making them ideal for loft flooring.

P5 - Moisture resistant - flooring grade, tongue and grooved

This grade can be used for all areas of domestic flooring including kitchens, bathrooms and utility rooms. It is load bearing and suitable for humid conditions.

Note: All grades of chipboard, except the P5 - moisture resistant variety, tend to soak up water.

Once water logged, chipboard will swell and breakdown, requiring replacement.

Tip: Chipboard with a melamine surface is widely used for flat-pack furniture and work surfaces/tops. If you are using this in an area that could become wet, always seal exposed surfaces and edges before installing – especially the hole cut into a worktop where the sink will go, and any exposed end pieces touching the floor.

The current British Standard for specifying particleboard is BS EN 312

HARDBOARD

What is Hardboard: It is a dense, highly compressed wood fibre thin sheet material and is a cheaper option than plywood, where strength is not required.

Hardboard is made from wood fibre, this is extracted from chips and pulped waste wood and is produced by exploding pulp under pressure. Heat and steam is applied to leave a fine, fluffy brown fibres. The fibres are transformed into mats, which are then pressed at high temperature to give a grainless sheet with a smooth surface on one side and a textured surface on the other.

Cutting

Support the board on both sides of the cutting line. Use a fine tooth saw and cut into the face (shiny side) of the board. If you are cutting a coated board, first score along the cutting line using a sharp knife and straightedge, this will prevent the edges from chipping.

Fixing

Hardboard can be fixed using hardboard pins, screws, nails or adhesives.

Fixings should be no closer to the edge or corners than 12mm.

The heads of hardboard pins are designed so that they 'disappear' into the surface after they have been hammered in.

Glue using a general-purpose impact adhesive or a woodworking PVA. It is a good idea to pin or clamp the sheet while the glue is setting. An adhesive only bonds to the top surface of hardboard, so don't just rely on gluing to support heavy weight.

Use for: Floor covering; draw bases, internal lining, boxing in, door facings and packaging.

Note: Hardboard should not be used outside as it absorbs water.

Tip: Hardboard is a very dry product and when used on floors, can ripple as it adsorbs moisture from the atmosphere, so if the board is to be used on a floor or for wall cladding, it is a good idea to condition with water before fixing in place. This is done by rubbing a little clean water into the rough side of the sheet, at about one litre per 2440 x 1220 x 3mm sheet. Then stack flat, wet side up, for about 48 – 72 hours in the building it is to be used. This will raise the sheet moisture content and allow it to dry

back to the ambient moisture content. This process, if stacked flat, will also remove any undulations caused through storage, packaging or handling.

MDF (Medium Density Fibreboard)

What is MDF: It is a very versatile product, suitable for many interior projects. It is made from wood fibres; dry bonded with synthetic resins and then compressed. This type of board is a uniform, strong, compact and stable material that is smooth on both surfaces and particularly even in thickness but it can't be used for outside work or exposed to rain.

MDF can be cut, screwed, glued, and profiled with normal woodworking tools but due to its high resin content, normal steel cutting tools will blunt quite quickly, so if much working is to be done, use carbide tools. MDF is supplied in a range of thickness and sizes, and is particularly suitable for painting, veneering and other forms of decoration.

Unlike plywood or chipboard, MDF is dense, flat, and very smooth, and because of this perfect smooth finish, it can be painted without preparation, resulting in a quality finish. It can also be varnished or stained.

MDF can be used instead of timber for virtually any internal woodworking project. Its smooth surface texture and lack of grain means it can be machined in all directions and to almost any shape, where ordinary timber would be difficult, making this product ideal for use with a router, this is why MDF is so widely used for mouldings and decorative trims.

MDF may be used instead of plywood or chipboard but whilst it is a dense, flat, rigid board, without knots, it is not as strong as timber so must be supported at regular intervals if weight is to be applied. MDF can be doweled, or jointed in a traditional manner and glued with PVA wood glue. Water or oil based paints and varnishes may be used.

Use for: Internal joinery and architectural mouldings i.e. door linings, skirting, architrave, dado rail etc. It can also be used for shop fitting, furniture and toys (it doesn't splinter).

MDF can have a tendency to split when screwed. Drill a small pilot hole first, this will reduce the chance of this happening.

Fixings should be no closer to the edge than 12mm or 25mm from corners.

Note: Always use breathing and eye protection. MDF creates a lot of dust when sanding or cutting, which can irritate the eyes and lungs. Proper ventilation is a must, and where available, use dust extractors on power tools. Preferably, do not work in confined spaces.

Tip: When painting or priming MDF, it is good idea to coat the whole of the product. You can use oil or wax finishes, but these are less effective at sealing.

The current British Standard for fibreboards is BS EN 622.

Aquapanel – Cement based board and Aquapanel Thermal, see Good Idea Leaflet 54

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